**Safety Evaluation by the DOE Regulatory Unit
of Proposed Authorization Basis Amendment Request,
ABAR-W375-00-00013,
to the Safety Requirements Document, Quality Assurance Implementation Plan,
and the Integrated Safety Management Plan
for the River Protection Project-Waste Treatment Plant
(Contract DE-AC06-96RL13308)**

## 1.0 INTRODUCTION

The River Protection Project-Waste Treatment Plant (RPP-WTP), formerly the Tank Waste Remediation System-Privatization (TWRS-P), facility that will vitrify radioactive waste at the Hanford Site is described in the above referenced contract. The authorization basis for RPP-WTP requires the contractor to maintain a Safety Requirements Document (SRD). The SRD is a document that contains the set of radiological, nuclear, and process safety standards and requirements which, if implemented, provide adequate protection of workers, the public, and the environment against the hazards associated with the operation of the contractor's facilities. In the BNFL letter CNN 012921 from A. J. Dobson to D. C. Gibbs, "…Transmittal of Authorization Basis Amendment Requests," dated April 24, 2000, the contractor submitted proposed amendments to the SRD affecting the Process Safety Management (PSM) program, including the deletion of all safety criteria contained in Section 9.3 of the SRD.

## 2.0 PROPOSED CHANGES

The Authorization Basis Amendment Request (ABAR) proposes the modifications of standards for Process Safety Management currently contained in the SRD, Quality Assurance Program and Implementation Plan (QAPIP), and the Integrated Safety Management Plan (ISMP). Specifically, the proposed changes include the following:

- Revise the definition of Safety Design Class (SDC) in SRD Safety Criterion (SC) 1.0-8 and SC 2.0-2, QAPIP, Section 1.3.1, and Integrated Safety Management Plan (ISMP) Section 12. The ABAR proposes changing the criterion requiring SDC structures, systems, and components (SSCs) for protection of co-located workers (by mitigating or preventing accidents involving loss of control of a process chemical); if a potential accident could result in exposing co-located workers to an airborne chemical at concentrations exceeding Emergency Response Planning Guideline 3 (ERPG-3), the SSCs relied on to prevent or mitigate the accident would be designated SDC. The proposed criterion requiring that those SSCs relied on for protecting facility workers be designated SDC is that a potential accident could result in an airborne concentration sufficient to result in a single worker fatality or the hospitalization of three or more workers. [The present criterion requiring SDC SSCs for protection of (all) workers and the

public is the potential exposure of workers or the public (to airborne chemicals) exceeding the ERPG-2 level of concern.)

- Provide for use of Temporary Emergency Exposure Limit (TEEL) values as substitute criteria in cases where no ERPG value has been published.

- Replace the ISMP with the SRD Appendix A as an implementing standard for SRD SC 1.0-1, 3.1-1, -2, -3, -4, -5, and -8.

- Remove references to 29 CFR 1910.119 and/or 40 CFR 68 as regulatory bases in SRD SC 1.0-1, 3.1-1, -2, -3, -5, -6, -7, -8, 4.0-2, 4.5-23, 6.0-1, -5, 7.1-1, -2, 7.2-3, -4, -5, -6, -7, -8, 7.3-7, -10, -11, 7.6-2, -4, 7.7-1, -2, -3, 7.8-1, -2, -5, 9.1-7, and ISMP Sections 1.3.16, 1.3.17, 3.10, 5.0, 5.6.8, 7.2, and 9.2.

- Delete SRD Section 9.3.

- Revise SRD SC3.1-1 to specify that chemical hazards must be included in the Process Hazard Analysis (PHA).

- Revise SRD SC 3.1-2 to allow compilation of process safety information appropriate to the level of design, to support the PHA.

- Revise the update frequency for PHA specified in SRD SC 3.1-7, and ISMP Sections 5.6.2 and 9.2 from once every 5 years to annually.

- Revise the seismic design criteria in SRD SC 4.1-3 and 4.1-4, and ISMP Section 1.3.10 for SSCs designated SDC on the basis of chemical accident consequences from SC-I/II to SC-III.

- Revise the chemical concentration limits specified in SRD SC 4.3-7 for control room habitability from ERPG-2 to the values specified in 29 CFR 1910.120, and add 29 CFR 1910.120 to the list of regulatory bases.

- Include chemical hazards in the definition of unreviewed safety question (USQ) specified in SRD SC 7.4-1, and ISMP Section 3.16.4.

- Revise the scope of the Hazards Identification specified in SRD Appendix A, Section 4.3.1 to include chemical hazards.

- Revise the discussion of Control Room Habitability in SRD, Appendix A, Section 5, and ISMP, Section 1.3.7-8 to be consistent with changes made to SRD SC 4.3-7.

## 3.0 BACKGROUND

Earlier, the flow-sheet for the RPP-WTP required that anhydrous ammonia be stored onsite in quantities exceeding OSHA and EPA's published thresholds, invoking the necessity for conformance with the requirements of 29 CFR 1910.119 (OSHA's Process Safety Management Standard) and 40 CFR 68 (EPA's Risk Management Program). Currently, the flowsheet provides for ammonia to be generated from urea as needed for $NO_x$ abatement. Thus the need to include 29 CFR 1910.119 and 40 CFR 68 requirements is not envisaged.

The chemical exposure criterion for workers and the public in the SRD is presently ERPG-2. The ERPG-2 criterion is consistent with EPA's criterion for protection of the public and the environment for accident consequence calculations under 40 CFR 68's Risk Management Program. However, RPP-WTP facility workers would receive training in understanding the hazards of the process chemicals under their control, would wear appropriate personal protective equipment, would have rapid access to showers and process chemical-specific first-aid treatment, and would be trained in appropriate emergency response measures. RPP-WTP co-located workers potentially exposed to process chemicals would have rapid access to showers and process chemical-specific first-aid treatment, and would be trained in emergency response measures; they would not be trained in understanding the hazards of the process chemicals. The public potentially exposed to RPP-WTP chemicals would not be trained in the nature of RPP-WTP process chemical hazards, would not have access to showers and first-aid treatment, and would not be trained in emergency response measures.

A graded, (i.e., proportionate) approach for the protection of persons from chemical accidents should therefore apply more restrictive criteria for protection of the public than for the protection of co-located workers and facility workers. Likewise, criteria for protection of co-located workers should be more restrictive than the criteria for protection of facility workers. The ABAR proposes ERPG-3 concentrations as the appropriate exposure criteria protecting co-located workers from accidents involving airborne releases of hazardous process chemicals. ERPG-3 values (which are higher than the corresponding ERPG-2 values protecting the public, and are, therefore, less conservative) are the commonly accepted criteria for the protection of co-located workers potentially exposed to airborne chemicals at DOE sites, nation-wide.

## 4.0 EVALUATION

**The following proposed changes are acceptable.**

Table 1 "Changes to the SRD Requirements for the PSM Program" in ABAR-W375-00-00013 lists the following proposed changes. This evaluation follows the sequence in Table 1.

Proposed change to SC 1.0-1: Delete 40 CFR 68 and 29 CFR 1910.119 as regulatory basis documents.

Evaluation: The proposed deletion of 29 CFR 1910.119 and 40 CFR 68 as regulatory basis documents is acceptable. As pointed out by BNFL, 29 CFR 1910.119 and 40 CFR 68 can be deleted as regulatory basis documents for SC 1.0-1 because WTP is not currently required to implement the requirements of these rules; none of the chemicals contained in the facility exceed the threshold quantities listed in the rules.

Proposed change to SC 1.0-8: Revise the definition of Safety Design Class to show ERPG-3 concentrations for the co-located worker. Definition of SDC for members of the public remains unchanged. Provide for use of TEEL concentrations where no ERPG has been published.

Evaluation: The proposed revised criterion for categorizing process equipment as SDC if co-located workers could be exposed to airborne chemicals at concentrations exceeding those defined by the relevant ERPG (i.e., ERPG-3) is acceptable. The related SC 2.0-2 presently sets *dose* standards, not *concentration* standards; ERPG-2 and ERPG-3 are defined as concentrations to which (breathing) receptors *are exposed to for an hou*r, i.e., doses. The proposed revision would classify equipment as SDC based on a potential exposure of co-located workers to airborne chemicals at *concentrations* exceeding ERPG-3 levels, *however briefly*. (The proposed substitution of TEEL concentrations in SC 2.0-2 where no ERPG has been published is acceptable. Published toxicity parameters from *Sax's Dangerous Properties of Industrial Materials* [Lewis, R. J., Sr., Van Nostrand Reinhold, New York, 1996] and RTECS [Databanks of Potentially Hazardous Chemicals, U. S. Department of Health and Human Services (NIOSH)] were used by the DOE Subcommittee on Consequence Assessment and Protective Actions (SCAPA) to derive TEEL-2s and TEEL-3s for chemicals lacking concentration-limit hierarchy-based values.

Proposed Change to SC 2.0-2: See SC 1.0-8, above.

Evaluation: The proposed revision of SC 2.0-2 substituting ERPG-2 concentration limits for the ERPG-2 dose standards for protection of the public is acceptable, and is more conservative because no time element for the exposure is implied (the hypothetical receptor could be exposed to concentrations exceeding ERPG-2 only momentarily.) The ERPG-2 criterion is consistent with EPA's criterion for protection of the public and the environment for accident consequence calculations under 40 CFR 68's Risk Management Program. Likewise, the proposed revision of SC 2.0-2 substituting the ERPG-3 *concentration limit* for the ERPG-2 *dose standard* for protection of co-located workers is acceptable, and is conservative. ERPG-3 values (which are higher than the corresponding ERPG-2 values, and are therefore less conservative) are the commonly accepted criteria for the protection of co-located workers potentially exposed to airborne chemicals at DOE sites nation-wide. On the other hand, no time element for the exposure is implied in the ABAR's proposal (the hypothetical receptor could be exposed to concentrations exceeding the ERPG-3 level only momentarily.) The substitution of ERPG-3 concentration limit for the ERPG-2 dose standard is, therefore, conservative.

Proposed Change to SC 3.1-1: Revise the criterion to clarify that the process hazards analysis must consider both radiological and chemical hazards. Replace the ISMP with Appendix A of the SRD as the implementing standard. Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.

Evaluation: The proposed revision to SC 3.1-1 to clarify that the process hazards analysis must consider both radiological and chemical hazards is acceptable, because both types of hazards pose threats to the public and workers. The proposed revision to replace the ISMP with Appendix A of the SRD as the implementing standard is acceptable, because Appendix A's description of the methodology of process hazards analysis essentially duplicates that provided in the ISMP. The proposed change to remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis for SC 3.1-2 is acceptable, because the provisions of these rules no longer apply to RPP-WTP.

Proposed Change to SC 3.1-2: Revise text to require compilation of process safety information appropriate to the stage of design, to support the PHA. Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.

Evaluation: The proposed change to the text of SC 3.1-2, requiring the compilation of process safety information appropriate to the stage of design, is acceptable, and conforms with the current ISMP, which recognizes that "Process technology information is developed as the design evolves." The proposed change to remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis for SC 3.1-2 is acceptable, because the provisions of these rules do not apply to RPP-WTP.

Proposed Change to SC 3.1-3: Replace the ISMP with Appendix A of the SRD as the implementing standard. Remove reference to 29 CFR 1910.119 and 40 CFR as the regulatory basis.

Evaluation: The proposed replacement of the ISMP Sections 1.3.4 and 5.5 as implementing standards for SC 3.1-3 by Appendix A is acceptable, because Appendix A's description of the methodology of process hazards analysis essentially duplicates that provided in the ISMP. The proposed change to remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis for SC 3.1-3 is acceptable, because the provisions of these rules no longer apply to RPP-WTP.

Proposed Change to SC 3.1-4: Replace the ISMP with Appendix A of the SRD as the implementing standard.

Evaluation: The proposed revision to replace the ISMP Sections 1.3.4 and 5 as the implementing standard for SC 3.1-4 5 with Appendix A of the SRD is acceptable, because Appendix A's description of the methodology of process hazards analysis essentially duplicates that provided in the ISMP.

Proposed Change to SC 3.1-5: Replace the ISMP with Appendix A of the SRD as the implementing standard. Remove reference to 29 CFR 1910.119 and 40 CFR as the regulatory basis.

Evaluation: The proposed replacement of the ISMP Section 5.5 as the implementing standard for SC 3.1-5 by Appendix A is acceptable. Appendix A's description of the methodology of process hazards analysis essentially duplicates that provided in the ISMP, except that Section 5.5 of the ISMP states "A written plan will be developed in Part B for participation of employees and their representatives in the conduct of the PHA and other elements of the TWRS-P Project PSM program." Appendix A is silent about employee participation in the conduct and development of process hazards analyses; however, "employee participation", i.e., worker involvement, in PHA activities is not required by the Top-level Principles of DOE/RL-96-0006. The proposed change to remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis for SC 3.1-5 is acceptable, because the provisions of these rules no longer apply to RPP-WTP.

Proposed Change to SC 3.1-6: Remove reference to 29 CFR 1910.119 and 40 CFR as the regulatory basis.

Evaluation: The proposed change to remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis for SC 3.1-6 is acceptable, because the provisions of these rules no longer apply to RPP-WTP.

Proposed Change to SC 3.1-7: Revise PHA update interval to once every year. Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.

Evaluation: The proposed change to update the PHA annually (instead of "at least every five years after the completion of the initial process hazard analysis" is acceptable. The proposed change to SC 3.1-7 will reduce the interval between revisions of the PHA for process chemicals to that applicable for radiochemical processing, i.e., a year. The proposed change to remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis for SC 3.1-7 is acceptable, because the provisions of these rules no longer apply to RPP-WTP.

Proposed Change to SC 3.1-8: Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.

Evaluation: The proposed change to remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis for SC 3.1-8 is acceptable, because the provisions of these rules no longer apply to RPP-WTP.

Proposed Change to SC 4.0-2: Remove reference to 29 CFR 1910.119 as the regulatory basis.

Evaluation: The proposed change to remove reference to 29 CFR 1910.119 as the regulatory basis for SC 3.1-9 is acceptable, because the provisions of this rule no longer apply to RPP-WTP.

Proposed Change to SC 4.1-3: Revise the seismic standard to specify SC-III for chemical systems.

Evaluation: The proposed revision to SC 4.1-3 involving the seismic category for SSCs for handling (non-radiological) process chemicals is acceptable. The proposed revision to SC 4.1-3 states: "SSCs designated as SDC based solely on a safety function relative to chemical hazards shall be designated as SC-III for earthquakes, and shall be designed to meet PC-3 requirements for other NPH events." Similarly, "SSCs designated as SDS based solely on a safety function relative to chemical hazards shall be designated as SC-III for earthquakes, and shall be designed to meet PC-3 requirements for other NPH events." "SSCs designated as SDS based solely on safeguarding a safety function relative to chemical hazards shall be designated SC-III for earthquakes, and shall be designed to meet PC-2 requirements for other NPH events." RPP-WTP processes involving non- radioactive chemicals are broadly comparable with those in typical U.S. processing industries in terms of risk to workers and the public. The non-nuclear chemical industries have developed seismic design requirements to control their chemical hazards. These requirements are embodied in the Uniform Building Code, which is implemented at WTP as Seismic Category III.

Proposed Change to SC 4.1-4: Revise to include chemical hazards.

Evaluation: The proposed revision to SC 4.1-4 involving the seismic category for SSCs for handling (non-radiological) process chemicals is acceptable. The proposed revision to SC 4.1-4 states: "SSCs that may be important to safety of the TWRS-P Facility shall be designed to withstand the effects of NPH such as earthquakes, winds, and floods…," and include "SSCs that are important to safety because of their function to protect workers and members of the public from exposure to chemical hazards. These SSCs are designated Seismic Category III (SC-III) for earthquakes and Performance Category 2 (PC-2) for other NPH." RPP-WTP processes involving non- radioactive chemicals are comparable with those in typical U.S. chemical processing industries in terms of risk to workers and the public. The non-nuclear chemical industries have developed seismic design requirements to control their chemical hazards. These requirements are embodied in the Uniform Building Code, which is implemented at WTP as Seismic Category III.

Proposed Change to SC 4.3-7: Revise to require that worker exposure not exceed concentrations specified in 29 CFR 1910.120.

Evaluation: The proposed revision to SC 4.3-7 is acceptable. SC 4.3-7 concerns control room habitability during accidents, and presently requires that "For occurrences and accidents involving chemical, i.e., non-radioactive, release, provisions shall be made such that the operator exposure does not exceed the worker exposure standards of Safety Criterion 2.0-2", i.e., ERPG-2. The ERPG-2 value is inappropriate, and would not

adequately protect operators in the control room during accidents involving chemical releases. 29 CFR 1910.120 "Hazardous Waste Operations and Emergency Response" (HAZWOPER) covers emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to the location of the hazard. 29 CFR 1910.120 references the permissible exposure limits in 29 CFR 1910 Subpart G "Occupational Health and Environmental Control" and Subpart Z "Toxic and Hazardous Substances," which provide appropriate, OSHA-mandated, limits.

Proposed Changes to SC 4.5-23, 6.0-1, 6.0-5, 7.1-1, 7.1-2, 7.2-3, 7.2-4, 7.2-5, 7.2-6, 7.2-7, 7.2-8, 7.3-7, 7.3-10, and 7.3-11: Remove references to 29 CFR 1910.119 (and 40 CFR 68, as appropriate) as the regulatory basis.

Evaluation: The proposed change to remove references to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis for the listed SCs is acceptable, because the provisions of these rules no longer apply to RPP-WTP.

Proposed Change to SC 7.4-1: Revise text to include chemical hazards in the USQ process.

Evaluation: The proposed revision to SC 7.4-1 extends the requirements for unreviewed safety question (USQ) determinations to include potential accidents involving non-radiological chemicals. The proposed revision to SC 7.4-1 is acceptable.

Proposed Changes to SC 7.6-2, 7.6-4, 7.7-1, 7.7-2, 7.7-3, 7.8-1, 7.8-2,7.8-5, 9.1-7: Remove reference to 29 CFR 1910.119 (and 40 CFR 68, as appropriate) as the regulatory basis.

Evaluation: The proposed change to remove references to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis for the listed SCs is acceptable, because the provisions of these rules no longer apply to RPP-WTP.

Proposed Change to Section 9.3: Delete the entire chapter.

Evaluation: The proposed deletion of Section 9.3 "Risk Management Plan" from the SRD is acceptable, because the basis for this Section, 40 CFR 68, is inapplicable to RPP-WTP.

Proposed Change to Appendix A, Section 4.3.1: Revise to be more specific about the scope of the chemical hazard assessment.

Evaluation: The proposed change is acceptable. The proposed revision to Appendix A's Section 4.3.1 deletes the requirement that "(chemical) hazards shall be subject to the graded application of the Process Safety Management (PSM) rule", and, instead, requires that "The assessment shall consider both the inherent hazard of the chemical itself, and the potential for the chemical hazard to initiate or exacerbate a radiological hazard." The definition of "chemical" is not limited to "process chemicals", i.e., those chemicals

comprising the usual, non-radioactive, process reagents, but could include decontamination chemicals (and any others) that might pose a threat to personnel and the integrity of process equipment. The detailed requirements of the PSM standard (29 CFR 1910.119) do not apply to RPP-WTP.

Proposed Change to Appendix A, Section 5.0: Revise discussion of ERPG concentrations.

Evaluation: The second proposed change to Appendix A, Section 5.0 which substitutes the phrase "specified in SC 4.3-7" for "ERPG-2 limits" is acceptable, because SC 4.3-7 now proposes to reference 29 CFR 1910.120 for "emergency exposures" (which are, in fact, no different from the permissible exposure limits applicable to normal operation.)

Table 2 "Changes to the QAP and ISMP" in ABAR-W375-00-00013 lists the following proposed changes. This evaluation follows the sequence in Table 2.

Proposed Change to ISMP Section 1.3.7: Revise specification for control room habitability.

Evaluation: The proposed revision referring to SRD SC 4.3-7 is acceptable, because the revision brings the ISMP into conformance with the corresponding proposed revisions to SC 4.3-7.

Proposed Change to ISMP Section 1.3.8: Delete references to ERPG-2 and revise specification for control room habitability.

Evaluation: The proposed revision referring to SRD SC 4.3-7 is acceptable, because the revision brings the ISMP into conformance with the corresponding proposed revisions to SC 4.3-7.

Proposed Change to ISMP Section 1.3.10: Exclude chemical safety SSCs from SCI/II criteria.

Evaluation: The proposed revision to ISMP Section 1.3.10 is acceptable, because the proposed revision brings the ISMP into conformance with proposed revised SC 4.1-3 and SC 4.1-4 for non-radiological, chemical hazards.

Proposed Change to ISMP Section 1.3.16: Delete reference to 29 CFR 1910.119.

Evaluation: The proposed revision to ISMP Section 1.3.16 is acceptable, because RPP-WTP is not subject to the requirements of 29 CFR 1910.119.

Proposed Change to ISMP Section 1.3.17: Delete reference to 29 CFR 1910.119.

Evaluation: The proposed revision to ISMP Section 1.3.17 is acceptable, because RPP-WTP is not subject to the requirements of 29 CFR 1910.119.

Proposed Change to ISMP Section 3.10: Delete reference to 29 CFR 1910.119 and 40 CFR 68.

Evaluation: The proposed revisions to ISMP Section 1.3.17 are acceptable, because RPP-WTP is not subject to the requirements of 29 CFR 1910.119 and 40 CFR 68.

Proposed Change to ISMP Section 3.16.4: Include chemical hazards in definition of USQ.

Evaluation: The proposed revision to ISMP Section 3.16.4 is acceptable, because it brings the ISMP into conformance with the proposed revision to SC 7.4-1, which includes chemical hazards in the USQ process.

Proposed Change to ISMP Section 5.6.2: Revise update requirements for HAR to annually.

Evaluation: The proposed revision to ISMP Section 5.6.2 is acceptable because it brings the ISMP into conformance with the proposed revision to SC 3.1-7 concerning the interval between PHA updates (one year).

Proposed Change to ISMP Sections 5.0 and 5.6.8: Delete reference to 40 CFR 68.

Evaluation: The proposed revisions of ISMP Sections 5.0 and 5.6.8 are acceptable, because RPP-WTP is not subject to the requirements of 29 CFR 1910.119 and 40 CFR 68.

Proposed Change to ISMP Section 7.2: Delete reference to 29 CFR 1910.119.

Evaluation: The proposed revision of ISMP Section 7.2 is acceptable, because RPP-WTP is not subject to the requirements of 29 CFR 1910.119.

Proposed Change to Section 9.2: revise update requirements for the HAR and delete reference to 29 CFR 1910.119 and 40 CFR 68.

Evaluation: The proposed revisions to ISMP Section 9.2 are acceptable, because the revision requiring annual HAR updates brings the ISMP into conformance with SC 3.1-7, and the revision deleting references to 29 CFR 1910.119 and 40 CFR 68 reflect that RPP-WTP is not subject to the requirements of OSHA's PSM Standard and EPA's Risk Management Program.

**The following proposed changes are unacceptable.**

Table 1 "Changes to the SRD Requirements for the PSM Program" in ABAR-W375-00-00013 lists the following proposed changes. This evaluation follows the sequence in Table 1.

Proposed change to SC 1.0-1: Replace ISMP Chapter 5.0 and Section 4.1 with SRD Appendix A as an implementing standard.

Evaluation: The proposed replacement of ISMP Chapter 5.0 and Section 4.1 with SRD Appendix A as an implementing standard is unacceptable. SC 1.0-1 includes a program addressing *management practices*, technologies, procedures, and operations. Appendix A is an "Implementing Standard for Safety Standards and Requirements Identification", i.e., a standard for *design* of the process. Chapter 5.0 and Section 4.1 of the ISMP are broader than Appendix A, covering *the management aspects* for ensuring adequate safety in the handling of process chemicals, toward which SC1.0-1 is directed. As noted in BNFL's Reason for Change, the basis for the PSM program continues to be the requirements for the PSM program specified in DOE/RL-96-0006, Chapter 5. However, because other SCs commit the contractor to a program of acceptable management practices, technologies, procedures, and operations, the contractor could omit the ISMP as the implementing standard without a reduction in commitment. Simple deletion of the ISMP as an implementing standard for SC 1.0-1 would be acceptable to the RU.

Proposed change to SC 1.0-8: Revise the definition of Safety Design Class to show concentrations that could reasonably be expected to result in either a single worker fatality or require in-patient hospitalization of 3 workers or more.

Evaluation: BNFL has proposed to revise the definition of SDC process equipment as that equipment which prevents "*concentrations* that could reasonably be expected to result in either a single worker fatality or require in-patient hospitalization of 3 workers or more." The proposed definition is too narrow, ignoring potential accidents that result in fatality, etc, of facility workers by asphyxiation, fire and explosions, and is, therefore, unacceptable. Facility workers in the immediate vicinity of process accidents involving the release of energy and/or chemicals may sustain injuries in many ways, only a few of which may involve exposure to airborne contaminants. A definition of SDC for SSCs as those relied on to prevent a single fatality or the hospitalization of 3 or more workers from a process upset (or abnormal event) would be acceptable to the RU, and would be consistent with 29 CFR 1904.8 "Reporting of fatality or multiple hospitalization incidents".

Proposed Change to SC 2.0-2: See SC 1.0-8, above.

Evaluation: The proposed revision to SC 2.0-2 for protection of the facility workers is unacceptable; BNFL has proposed to revise the definition of SDC process equipment as that equipment which prevents "*concentrations* that could reasonably be expected to result in either a single worker fatality or require in-patient hospitalization of 3 workers or more." The proposed definition is too narrow, ignores potential accidents that result in fatality, etc, of facility workers by asphyxiation, fire and explosions. A definition of SDC for SSCs as those relied on to prevent a single fatality or the hospitalization of 3 or more workers from a process upset (or abnormal event) would be acceptable to the RU, and

would be consistent with 29 CFR 1904.8 “Reporting of fatality or multiple hospitalization incidents”.

Proposed Change to SC 3.1-2: Replace the ISMP with Appendix A of the SRD as the implementing standard.

Evaluation: The proposed change to replace the ISMP Section 5.1 “Process Safety Information” with the SRD’s Appendix A as an implementing standard is unacceptable because the proposed implementing standard unreasonably reduces the contractor’s commitment expressed by the SC. Top-level Principle 5.2.1 “Process Safety Information” in DOE/RL-96-0006 requires the contractor to “develop and maintain certain important information about the process. The information is intended to provide a foundation for identifying and understanding the process hazards.” Without adding anything not already expressed in SC 3.1-2, Section 5.1 of the ISMP provides a listing of items of process safety information, and includes information on toxicity, permissible exposure standards, physical data, reactivity data, corrosivity data, thermal and chemical stability data, and an assessment of the effects of inadvertently mixing different materials, none of which feature in SRD Appendix A. Appendix A cites process descriptions, system descriptions, descriptions of key structures, basis of design documents, PFDs, MFDs, and P&IDs as products of the identification of work, but these represent a considerably more limited range of process safety information. Because ISMP Section 5.1 is merely a repetition of SC 3.1-2, simple deletion of the ISMP as an implementing standard for SC 3.1-2 would be acceptable to the RU.

Proposed Change to SC 3.1-8: Replace the ISMP with Appendix A of the SRD as the implementing standard.

Evaluation: The proposed replacement of the ISMP (Section 5.5 “Process Hazards Analysis” and Chapter 8.0 “Document Control and Maintenance” with SRD Appendix A as the implementing standard for SC 3.1-8 is unacceptable because the proposed implementing standard unreasonably reduces the contractor’s commitment expressed by the SC. SC 3.1-8 requires that “Employers shall retain process hazards analyses and updates or revalidations as well as the documented resolution of any recommendations for the life of the process.” Section 5.5 of the ISMP refers to the document control process discussed in Chapter 8.0, “Document Control and Maintenance.” Retention of PHA records permits PHAs to be re-visited, e.g., for re-evaluation of assumptions, and the adequacy of selected hazard controls should the need arise. Appendix A of the SRD is silent concerning the retention of process hazards analyses, although it requires the *results* of the hazard evaluation, i.e., the selected standards, to be documented in the SRD. Because ISMP Section 5.5 and Chapter 8 do not express a commitment concerning retention of records of process hazard analyses beyond that expressed by SC 3.1-8, simple deletion of the ISMP as an implementing standard for SC 3.1-8 would be acceptable to the RU.

Proposed Change to Appendix A, Section 5.0: Revise discussion of ERPG concentrations.

Evaluation: The first of the two proposed changes to Appendix A's Section 5.0 is unacceptable. The first proposed revision substitutes the phrases "the standards of SC 2.0-2" for "ERPG-2 limits". BNFL's ABAR states that the changes are required to bring Appendix A Section 5.0 into conformance with the proposed revisions to SC 1.0-8. However, the proposed revision to SC 1.0-8 refers to the chemical exposure standards in the SRD (SC 2.0-2), which have been evaluated and determined to be unacceptable.

Table 2 "Changes to the QAP and ISMP" in ABAR-W375-00-00013 lists the following proposed changes. This evaluation follows the sequence in Table 2.

Proposed Change to QAP Section 1.3.1: Revise definition of Safety Design Class.

Evaluation: The definition of Safety Design Class is actually in QAP Section 1.3.1 "Classification of Items" (not, as the ABAR states, in Section 1.2.1.) As the "Reason for Change" to the QAP states, "Revision is needed to conform to SRD definition." However, the proposed revision to the QAP defines Safety Design Class SSCs as those "SSCs that, by performing their specified safety function, prevent workers or the maximally exposed member of the public from receiving a radiological or chemical exposure that exceeds the exposure standards defined in the SRD." The proposed revision to the QAP is unacceptable because the proposed chemical exposure standard for worker protection defined in the SRD (SC 2.0-2) was evaluated by the RU and determined to be unacceptable.

Proposed Change to ISMP Section 1.3.7: Delete references to ERPG-2.

Evaluation: The revisions referring to SRD SC 1.0-8 are unacceptable for the reason that SC 1.0-8 references proposed revised SC 2.0-2, which the RU has evaluated and determined to be unacceptable.

Proposed Change to ISMP Section 12.0: Revise definition of Safety Design Class.

Evaluation: The proposed revision to the definition of Safety Design Class in ISMP Section 12.0 is unacceptable, because the proposed worker protection standard defined in the SRD (SC 2.0-2) was evaluated by the RU and determined to be unacceptable.

## 5.0 CONCLUSION

On the basis of the considerations described above, the RU has concluded that there is insufficient assurance that certain of the proposed amendments will not adversely affect the health and safety of the public and the workers. The proposed revision to SC 2.0-2 relating to the standard for the protection of facility workers from chemical hazards is too limiting (by restricting the worker protection criterion to accidents involving exposure to certain *concentrations* of airborne contaminants, instead of the whole range of process accidents to which workers may be at risk), and is, therefore, unacceptable. This has the "domino" effect of making other, related, proposed revisions to the SRD, ISMP, and

QAP unacceptable. A definition of SDC for SSCs as those relied on to prevent a single fatality or the hospitalization of 3 or more workers from a process upset (or abnormal event) would be acceptable to the RU, and would be consistent with 29 CFR 1904.8 "Reporting of fatality or multiple hospitalization incidents". In addition, proposed substitutions of certain sections of the ISMP by Appendix A of the SRD as implementing standards for certain SCs are unacceptable because Appendix A represents an inappropriate reduction in commitment expressed in the SCs. The ISMP, in those cases, actually provides a superior standard. In three of the proposed revisions to the SRD, the ISMP as an implementing standard provides no additional commitments to those already expressed in the SCs; the ISMP could, therefore, be deleted as an implementing standard without a reduction in commitment.